

## CLAIMS

1. An ink-jet head comprising:
  - a nozzle plate in which a nozzle that discharges ink is formed;
  - a pressure application section that applies pressure to ink;
  - a nozzle plate holding member that holds said nozzle plate;
  - 10 a head plate that holds a plurality of ink discharge units composed of at least said nozzle plate and said pressure application section and said nozzle plate holding member;
  - 15 a sealing member that seals a gap between said ink discharge unit and said head plate so that air does not pass through and supports said ink discharge unit movably with respect to said head plate by itself being deformed; and
  - 20 a fixing member that fixes said ink discharge unit and said head plate after a gap between said ink discharge unit and said head plate is sealed by said sealing member and alignment of said ink discharge unit with said head plate is performed.
- 25 2. The ink-jet head according to claim 1, wherein said fixing member fixes said ink discharge unit to said head plate in an attachable and removable fashion.

3. The ink-jet head according to claim 1, wherein:  
said head plate has an aperture part through which  
an ink drop discharged from said ink discharge unit passes;  
5 and

ink repellence processing is performed on at least  
part of a surface of said head plate on a side on which  
ink is discharged.

10 4. The ink-jet head according to claim 1, wherein:  
said head plate has an aperture part through which  
an ink drop discharged from said ink discharge unit passes;  
and

ink repellence processing is performed on a side  
15 on which ink is discharged of part of a wall surface of  
said aperture part that is not in contact with said sealing  
member.

5. The ink-jet head according to claim 1, further  
20 comprising a temperature changing section that changes  
a temperature of said head plate;

wherein, by changing a temperature of said head plate  
by means of said temperature changing section, thermal  
expansion and contraction of said head plate is caused,  
25 and spacing of said nozzles of said ink discharge units  
is maintained at a desired value.

6. The ink-jet head according to claim 5, wherein a temperature distribution is provided in a direction of a row of said nozzles of said ink discharge units by said temperature changing section.

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7. The ink-jet head according to claim 5, wherein pressure applied by said pressure application section is changed in accordance with a temperature of said head plate.

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8. The ink-jet head according to claim 5, wherein said temperature changing section is a heater that generates heat through passage of electric current and is attached to said head plate.

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9. The ink-jet head according to claim 8, wherein said heater has a heat generation distribution with respect to said head plate.

20 10. The ink-jet head according to claim 5, wherein said ink discharge unit is fixed to said head plate in an attachable and removable fashion.

25 11. The ink-jet head according to claim 5, wherein each of said ink discharge units is provided with only one nozzle plate in which only one said nozzle is formed.

12. The ink-jet head according to claim 1, wherein:  
said pressure application section comprises:  
a diaphragm that moves relative to said nozzle plate;  
and

5 a piezoelectric element that drives said diaphragm,  
and  
a direction of relative movement of said diaphragm  
is a direction approximately parallel to a discharge  
direction of an ink drop discharged from said nozzle.

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13. An ink-jet recording apparatus comprising:  
the ink-jet head according to claim 1; and  
a nozzle pitch detection section that detects  
spacing of said nozzles of said ink-jet head.

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14. An ink-jet head manufacturing method that is a  
manufacturing method of the ink-jet head according to  
Embodiment 1, wherein alignment of said ink discharge  
unit and said head plate is performed while discharging  
20 an ink drop from said ink discharge unit and observing  
a state of flight of an ink drop discharged from said  
ink discharge unit.

15. An ink-jet head manufacturing method that is a  
25 manufacturing method of the ink-jet head according to  
Embodiment 5, wherein a temperature of said head plate  
during use of said ink-jet head is T1, and a nozzle pitch

of said plurality of ink discharge units at said temperature  $T_1$  is  $P_1$ , and if a nozzle pitch of said plurality of ink discharge units changes to  $P_2$  when a temperature of said head plate is changed to  $T_1$  by said 5 temperature changing section, alignment of said ink discharge unit and said head plate is performed with a temperature of said head plate at  $T_2$  so that a nozzle pitch of said plurality of ink discharge units becomes  $P_2$ .

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16. An ink-jet head manufacturing method that is a manufacturing method of the ink-jet head according to Embodiment 5, wherein alignment of said ink discharge unit and said head plate is performed in a state in which 15 said ink-jet head is maintained at a temperature at which said ink-jet head is finally used by using said temperature changing section.